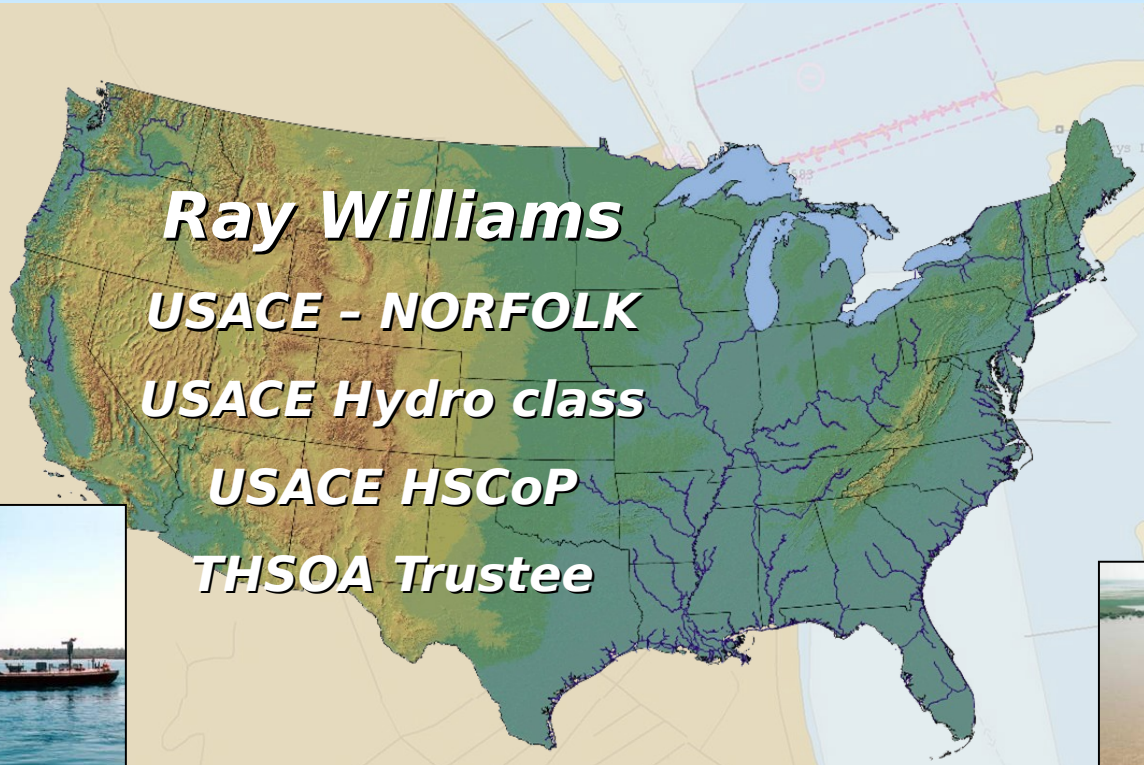
US Army Corps of Engineers ®

Hydrographic Surveying



Ray Williams

USACE – NORFOLK

USACE Hydro class

USACE HSCoP

THSOA Trustee

US Army Corps of Engineers ®

Hydrographic Surveying

Dredging Industry Hydro Survey Issues

May 26, 2005: Dredging contractors meet with HQ to discuss problems with hydro survey practices in the districts;

Concerns voiced over non-standard, ambiguous, and incorrect hydro survey practices in support of dredging among Corps offices, with both in-house surveys and contract specifications.

April 2006: Issues paper drafted by industry,

- Ready survey crews
- EM 1110-2-1003 compliance
- Timeliness
- Multibeam use and application
- Project acceptance
- Regionalization
- Use of remote tide gages

US Army Corps of Engineers ®

Hydrographic Surveying

DREDGING INDUSTRY HYDRO SURVEY ISSUES ISSUE PAPER

The performance and use of hydrographic surveying in the execution of a dredging contract is critical to the timely restoration of channel grade. The lack of ready survey crews (*We agree, the USACE needs a bigger budget for a larger work force*), misunderstandings about the capability of technology, and policy inconsistency across the Corps is very costly to contractors and to navigation users.

Technology blindness and policy inconsistency can be serious problems.

Issues: 1) following the Hydrographic Survey Manual and Dredging Regulations (EM 1110-2-1003); 2) timely performance; 3) use of multi-beam surveys, i.e., "not for every channel"; 4) regionalization of survey management and oversight; 5) inconsistencies in acceptance criteria from district to district, or within district; 6) and surveying practices in projects with remote tide gages (Although this is not mentioned again later in this paper, these and critical bottom projects are some of the most challenging. A strong

US Army Corps of Engineers ®

Hydrographic Surveying

DREDGING INDUSTRY HYDRO SURVEY ISSUES ISSUE PAPER

1) Survey Manual and Dredging Regulations. We consider the Corps Hydrographic Survey Manual and the Corps Dredging Regulations to be good guidance documents. We are concerned that district staff are not following these guidance documents and complying with the regulations. It is important that all staff that collect and process hydrographic surveying data read, understand, and follow the Survey Manual, EM 1110-2-1003.

We agree, these are great guidance documents. **Each year we have a PROSPECT course that is based on the EM to provide further guidance. Because this is such a "techno-dynamic" field, the USACE is starting procedures to update the EM and input from the industry is encouraged.**

US Army Corps of Engineers ®

Hydrographic Surveying

DREDGING INDUSTRY HYDRO SURVEY ISSUES ISSUE PAPER

2) Timeliness. One specific example of why there is a need to comply with the Survey Manual is the need for timely surveys. Substantial impacts to payment and dredging quantity variations can result from untimely surveys. If the surveys for contract specifications, and before-, and after-dredging surveys are obtained as described below, there would be less variations in quantities, and potential claims. Timely surveys, Chapter 14 "The hydrographic survey drawings and estimated quantities shown in the contract documents shall have been made as close to the solicitation advertisement date as possible – typically within 120 days or less, depending on estimated shoaling rates."

Pre-dredge surveys – "….as close to the start of dredging as possible: generally within 14 days…"

After-dredge surveys – "…as soon as possible after dredging in a reach or acceptance section is completed: generally within 5 days or less.

Final survey plots and quantity computations are required within two (2) days of the survey in order to release the dredge to other work."

At a minimum, the contracts should well identify what should be delivered and when.

US Army Corps of Engineers ®

Hydrographic Surveying

DREDGING INDUSTRY HYDRO SURVEY ISSUES ISSUE PAPER

3) Multi-beam Surveys. Not all channels should be surveyed with multi-beam equipment, especially shallow draft projects. Although the EM presently alludes to this viewpoint, there is not are a valid technological reason why it can't be used in channels shallower than 15 feet. You may not want to get 100% bottom coverage and you will get more coverage than a single-beam system.

The technology is sophisticated, and there is concern that operators and users are not properly trained to ensure understanding calibration requirements and appropriate application limits.

This is sophisticated technology. *In fact, We feel all hydrographic surveying and dredging also takes knowledgeable, well-trained personnel. We hope that any entity (private or public) would ensure ample training before advancing into using new technology.*

US Army Corps of Engineers ®

Hydrographic Surveying

DREDGING INDUSTRY HYDRO SURVEY ISSUES ISSUE PAPER

4) Regionalization. Divisions are beginning to regionalize functions. SAD has Charleston as the responsible district manager for all East Coast division surveying, and Jacksonville as the regional contracting district for the Division (for MATOC, regional IDIQ etc), Savannah will manage all dredging contracts for Wilmington, Charleston and Savannah. Mobile will manage all contracts and surveying for Gulf dredging. The USACE HSCoP is also very concerned about regionalization as it relates to timely response and communications as this evolves around the Corps. However, the USACE HSCoP have already been involved with regional and multi-regional actions. The keys for this business process are “inter” and “intra” communication.

US Army Corps of Engineers ®

Hydrographic Surveying

DREDGING INDUSTRY HYDRO SURVEY ISSUES
ISSUE PAPER

5) Project Acceptance. Some districts exercise flexibility in accepting work with minor instances of less than project depth along the prism, while others expect every sounding to be at or deeper than the required depth.

This can be a real problem. **Because of the need for accurate volume computation, the pre and post construction measurements are made to the nearest tenth of a foot. Hopefully, with cancellation of system bias, fair and equitable payment will be made. However, when soundings are displayed to the tenth of the foot for channel clearance, it implies an accuracy usually impossible to obtain. A greater understanding of the statistical certainty of the hydrographic data is needed. USACE hydrographic data should have a 95% certainty typically of ± 1.0'. People can grasp the concept of positional inaccuracy in land surveying but fail to understand that this is at a higher magnitude in hydrographic surveying.**

US Army Corps of Engineers ®

Hydrographic Surveying

DREDGING INDUSTRY HYDRO SURVEY ISSUES ISSUE PAPER

The dredging industry would like to ensure that the use and policies, procedures, timing, and acceptance should be topics of the preconstruction project conference and partnering agreement.

This is the key statement. The USACE Districts must establish early meaningful dialogue with our Project Managers and construction partners to ensure success in this tough business arena. We should have "*hydro-knowledgeable*" representatives available and be able to share the hydro digital data freely.

There has to be a better way!
Shuddup! This is the way we've always done it
Well, we need a CoP!

US Army Corps of Engineers ®

Hydrographic Surveying

What is a Community of Practice?

USACE policy *2012* definition of Community of Practice

Communities of Practice (CoP) are made up of people who practice and share an interest in a major function or business line. The members come from the Corps, academia, private practice, or other agencies.

US Army Corps of Engineers ®

Hydrographic Surveying

2012 states that CoPs will address:

- Policy and doctrine
- Capable workforce
- National and interagency relations and coalitions
- Accelerating organizational communication
- Implementing learning organizational doctrine

US Army Corps of Engineers ®

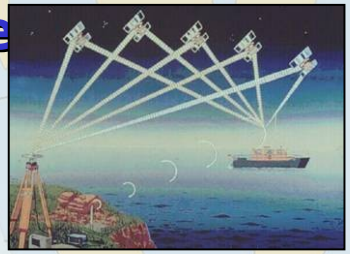
Hydrographic Surveying

Hydro Survey Community of Practice

"Our method is communication, our strength is participation"

Formed Dec, 2004, with a workshop that included 23 districts

- **HSCoP is a "*grass-root*" participation that crosses District lines on such issues as Post-disaster response, software/hardware issues, EM updates, employment/training, SOW's, survey processing, equipment AND response to industry.**
- **Business conducted mostly through email and online collaboration, with occasional dedicated collocated meetings;**
  - **Biennial Geospatial Symposium,**
  - **Annual NAD Multi-beam Users Group,**



https://ten.usace.army.mil/TechExNet.

Communities of Practice (CoP)
CoP/SME Leaders
Customers Relationships
Expertise
Lessons Learned
Best Practices
Business Areas
Career Development
Centers of Expertise
Automated Info Sys
Educational Resources
Publications
Sub Communities

Last Updated: 4/8/2004

Community

Engineering & Construction (E&C)

Leader: Donald Basham

Directs the technical aspects of engineering, construction management, environmental protection and restoration, operations, and maintenance and repair activities of USACE missions worldwide. We develop Technical Policy; develop and integrate new technologies with our existing technology base; and manage all technical aspects of our military and civil infrastructure and water resource missions. We are also responsible for all policy for architecture, and are responsible for assuring all projects are value engineered. The Technical Excellence Network is another tool to help foster the communication and collaboration within the E&C CoP and it's many sub-CoPs.

Communities

Architecture / Chris Hinton-Lee
The Architecture CoP ...this content comes from the short description area

CADD (multi-discipline) / Toby Wilson

Civil Engineering / Gregory Hughes

Construction Management / Walt Norko

Cost Engineering / Raymond Lynn

Dam Safety / Charles Pearre

Electrical & Electronic Engineering / Robert Billmyre

Engineering Management / Charles Pearre

Geo Technology / David Pezza

Geospatial / Nancy Blyler

H & H / Jerry Webb

Materials Engineering / Tony Liu

Mechanical / Robert Billmyre

Specifications / Peter Rossbach

Structural / Joseph Hartman
Structural Engineering community for USACE; addressing both Civil & Military facilities. Includes sub-

Members

HQ POC
SME
RTE
MSC/RBC POC
All

Automated Info Systems

Accident Experience and Analysis System

Architect-Engineer Contract Administration Support System

Army Ideas of Excellence Program Automated System

AUPS

Automated Personal Property Management System

Automated Review Management System

Bridge Inventory System

Business Information Integration Technology/Data Encyclopedia

CAGIS

CE Automated Legal System

...More

Areas of Expertise

Abandoned mine remediation

Access flooring

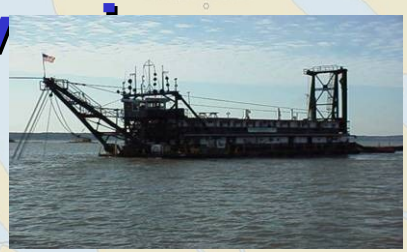
Acoustical treatments for walls and ceilings

US Army Corps of Engineers

Hydrographic Surveying

WHERE DO WE GO FROM HERE?

There is a need for continued dialogue with the USACE and their partners in the dredging and hydrographic surv i arena.



The USACE HSCoP will be meeting:

- Atlantic City NJ, 10/30/06-11/3/06, poc Joe Scolari CENAP, some days to be “closed”, agenda TBD
- Norfolk VA, 5/14/07-5/17/07, EM update workshop, to be chaired by Bill Bergen and Ray Williams, open to all, future info at http://www.thsoa.org/

US Army Corps of Engineers ®

Hydrographic Surveying

USACE HSCoP Point of Contact List – Short Version

Raymond (Ray) J. Williams

USACE – Norfolk District (CENAO)

757 201-7665

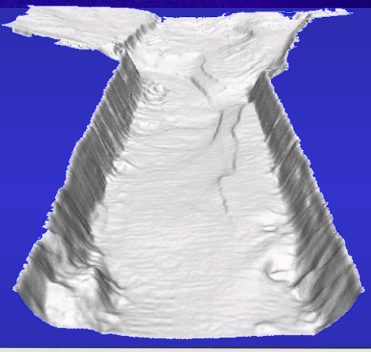
HSCP@usace.army.mil

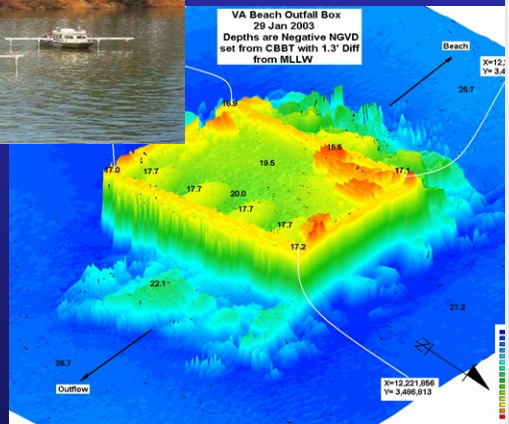
US Army Corps of Engineers.

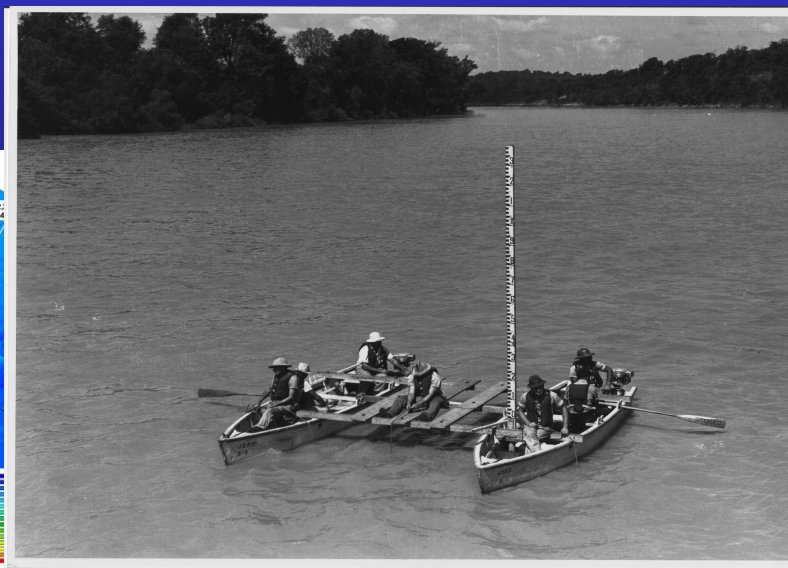
Hydrographic Surveying

Community of Practice

"Our method is communication, our strength is participation"

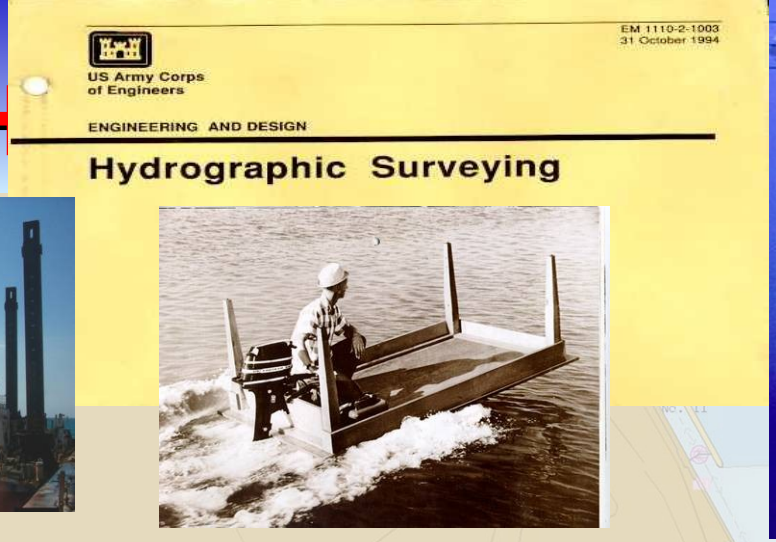


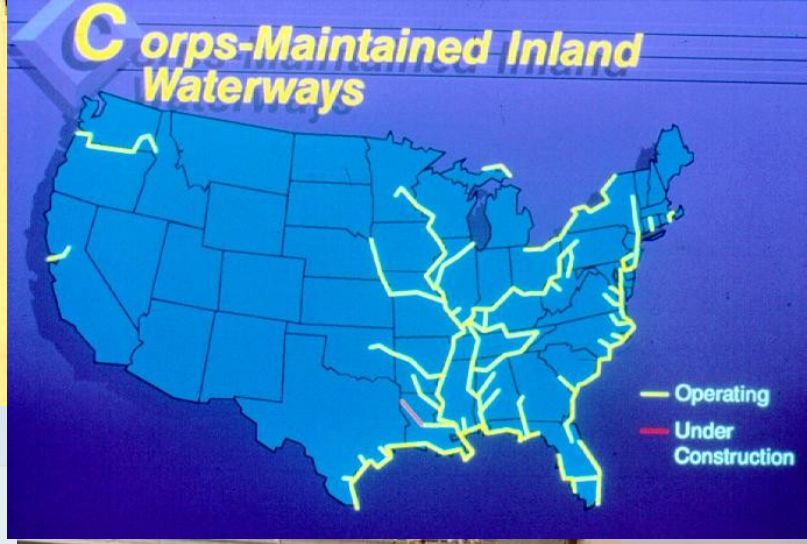




US Army Corps of Engineers ®

H





QUESTIONS ?

US Army Corps of Engineers ®

Hydrographic Surveying